library(ggplot2)

library(tidyverse)

library(gmodels)

library(vcdExtra)

library(DescTools)

# Read in the safety data

safety <- read.csv('https://raw.githubusercontent.com/IAA-Faculty/statistical\_foundations/master/safety.csv')

# Examine relationship between region and unsafe

table(safety$Region, safety$Unsafe)

ggplot(data = safety) +

geom\_bar(mapping = aes(x = Unsafe, fill = Region))

CrossTable(safety$Region, safety$Unsafe)

CMHtest(table(safety$Region, safety$Unsafe))$table[1,]

table(safety$Region, safety$Unsafe)

OddsRatio(table(safety$Region, safety$Unsafe))

1/OddsRatio(table(safety$Region, safety$Unsafe))

# Examine relationship between size and unsafe

prop.table(table(safety$Size, safety$Unsafe))

ggplot(data = safety) +

geom\_bar(mapping = aes(x = Unsafe, fill = factor(Size)))

CrossTable(safety$Size, safety$Unsafe)

CMHtest(table(safety$Size, safety$Unsafe))$table[1,]

cor.test(x = as.numeric(ordered(safety$Size)),

y = as.numeric(ordered(safety$Unsafe)),

method = "spearman")